

ATTACHMENT A

Electronic Acknowledgement Receipt

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Title of Invention:	FUNCTION EXECUTION METHOD, FUNCTION EXECUTION APPARATUS, COMPUTER PROGRAM AND RECORDED MEDIUM
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Document Number	Document Description	File Name	File Size(Bytes)	Multi Part	Pages
1		00822191.PDF	101128	yes	6

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	Doc Desc	Start	End
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	NPL Documents	4	4
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Dated: _____

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: Farrokh HASHEM

**For: FUNCTION EXECUTION METHOD,
FUNCTION EXECUTION APPARATUS,
COMPUTER PROGRAM AND RECORDED
MEDIUM**

{W:\04970\000N023000\00837282.DOC 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 }

Substitute for form 1449A/B/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	10/628,133-Conf. #4516
				Filing Date	July 25, 2003
				First Named Inventor	Akishige Yamamoto
				Art Unit	2187
				Examiner Name	H. Farrokh
				Attorney Docket Number	04970/000N023-US0
Sheet	1	of	1		

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶

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NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	CA	English Language translation of Japanese Patent Appln. No. 60-8944, page 1, lower right column, line 20 to upper left column, line 1 and page 3, upper left column, lines 8-19	
	CB	English Language translation of Kawai et al. "The Design and Implementation High Performance and Portable Java Virtual Machine", Research Report of Information Processing Society, vol. 98, no. 15, pp. 25-30 (February 26, 1998), page 25, left column.	
	CC	English Translation of Ishizaki et al. "Design, Implementation and Evaluation of Optimizations in a Java Just-In-Time Compiler", Research Report of the institute of Electronics Information and Communication Engineers, vol. 99, no.252, pp. 17-24 (August 5, 1999), page 20, left column	

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Japanese Patent Application Laid-Open No. 60-8944

a) page 1, lower right column, line 20 to upper left column, line 1;

In SUBR functions, a user generally writes a program in a high-level language, which is then compiled into machine language.

b) page 3, upper left column, lines 8-19

Next will be described tail recursion calls, which the present invention specifically relates to.

In functional languages, as described above, work proceeds by having individual functions call other functions. In the case of the final function call, no operations are performed after returning so there is no need to save PC or MPC and there is no need to create a frame for the function to be called. As a result, the frame of the current calling function is used to make the function call. This is generally referred to as a tail recursion call. This makes it possible to skip the operations of creating a frame and destroying a frame, thus improving execution speed.

Kawai et al. "The Design and Implementation of High Performance and Portable Java Virtual Machine", Research Report of Information Processing Society, vol. 98, no. 15, pp. 25-30 (February 26, 1998):

a) page 25, left column

1. Background

In recent years, there has been a growing demand for distributed environments. In building distributed environments, a major issue is mixing different platforms. In the Java language and operating environment, byte code compiled from source code is interpreted by a Java Virtual Machine (JVM). This makes it possible to provide a platform-independent execution environment, thus broadening the possibilities of distributed environments.

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Ishizaki et al. "Design, Implementation and Evaluation of Optimizations in a Java Just-In-Time Compiler", Research Report of the Institute of Electronics, Information and Communication Engineers, vol. 99, no. 252, pp. 17-24 (August 5, 1999):

6. Optimizing method calls

6.1 In-line expansion of static method calls

Furthermore, by replacing tail recursion with a jump instruction to the start of the method, optimization can be performed on a recursive call by expanding the method body once.